REMARKS

Claims 1-4 are all the claims pending in the application. By this Amendment, Applicants are adding new claims 5 and 6.

Applicants kindly request the Examiner to acknowledge their claim to foreign priority and to confirm that the certified copy of the priority document was received by the USPTO.

Applicants thank the Examiner for initialing the references listed on form PTO-1449 submitted as part of the Information Disclosure Statement on August 2, 2000, thereby confirming that these references have been considered.

The Examiner has rejected claims 1-4 under 35 U.S.C. § 103(a) as being unpatentable over Yamazaki (USP 4,816,113). Specifically, the Examiner takes the position that Yamazaki discloses all the features of claims 1-4, except that "Yamazaki doesn't describe adjusting the content of particles having a particle size of 0.5 μm or more to [sic] 1000 particles/ft^3/min or less (such as 500 or 100 particles/ft^3/min)." Office Action at page 2.

The Examiner then takes the position that Yamazaki's "steps of cleaning and [evacuating] the chamber to a high vacuum condition would reduce any undesirable products including particles having a particle size of 0.5 μm or more to 1000 particles/ft^3/min or less (such as 500 or 100 particles/ft^3/min)." Office Action at page 2. Applicants respectfully disagree.

The Examiner appears to acknowledge that Yamazaki does not explicitly disclose Applicants' claimed feature of "adjusting a content of particles having a particle size of 0.5 μm or more in a film deposition system of the carbon layer to 1000 particles/ft^3/min or less . . . ."

Therefore, in order to reject claims 1-4 in view of Yamazaki, the Examiner must either argue that Yamazaki discloses this feature implicitly or inherently, or that this feature would have been obvious given the remaining disclosure of the reference.[1]

It is well settled that the fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic. In re Rijckaert, 28 USPQ2d 1955, 1957 (Fed. Cir. 1993). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient.'" In re Robertson, 49 USPQ2d 1949, 1950-51 (Fed. Cir. 1999). Moreover, "[i]n relying upon the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art." Ex parte Levy, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). Here, the Examiner has not presented any evidence or reasoning tending to show inherency.

Rather, as quoted above, the Examiner has merely stated that the "steps of cleaning and [evacuating] the chamber to a high vacuum condition would reduce any undesirable products including particles having a particle size of 0.5 μm or more to 1000 particles/ft^3/min or less (such

[1] Of course, if the Examiner believed that Yamazaki inherently or implicitly discloses the claimed feature in question, then the Examiner would have rejected at least claim 1 under 35 U.S.C. 102(b) as ...(footnote continued)

as 500 or 100 particles/ft^3/min)." That is, the Examiner asserts that, according to the dry etching process disclosed in Yamazaki, the etching cleaning process performed after the formation of a film would necessarily result in the reduction of the content of particles having a particle size of 0.5 μm or more to 1000 particles/ft^3/min or less by the evacuation (to 1 x 10^{-6} Torr) after the dry etching process. Applicants respectfully submit that the Examiner's conclusion is mere speculation and that there is no basis in fact or technical reasoning for reaching this conclusion.

Yamazaki discloses a method of removing undesirable carbon deposition on the inside of a reaction chamber for CVD without damaging the inside wall of the reaction chamber by dry etching the inside wall using oxygen. Yamazaki is completely silent with respect to adjusting the content of particles in the reaction chamber to be within a certain range. Indeed, this feature is unobvious in view of the reference, especially given that Yamazaki does not appreciate the importance of adjusting the content of 0.5 μm particles (or greater) to 1000 particles/ft^3/min in order to minimize the pinholes and cracks in, for example, the thermal recording head protective coating.

Moreover, in the dry etching process, a reactive gas is converted into a plasma gas and a negative bias voltage is applied to the object to be etched to thereby etch the object surface to a depth on the order of 0.1 to 1 μm.

1) Accordingly, a dry etching process would be required to be performed for a long time in order to remove foreign matters deposited to a thickness of about 10 to 100 μm to the

being anticipated by Yamazaki. Nevertheless, Applicants submit that under either theory of anticipation or obviousness, Yamazaki does not teach or suggest the feature in question.

inner wall of the chamber of such a film deposition apparatus as that to which the present invention is directed. It is practically impossible to take such measures.

2) Additionally, the dry etching process has a cleaning effect on the peripheral portion of the object to which a bias voltage required for the dry etching process can be applied. On the inner wall of the chamber of a film depositing apparatus that is important for good deposition results, however, the process has almost no cleaning effect because generally the electric potential of the inner wall of the chamber falls to ground potential.

3) Furthermore, the pressure of 1×10^{-6} Torr disclosed in Yamazaki is regarded to represent the quantity of a dilute gas in a vacuum. Particles existing in a solid form are still deposited to the inner wall of the chamber or falling on the chamber floor and their existence can not be represented by a pressure measurement. In addition, the residual solid particles may cause a production defect by rounding about the object when the apparatus is actuated.

According to the present invention, on the other hand, foreign matters or residues of small particle size deposited on the inner wall of the chamber are removed by wiping the inner wall surface for cleaning to thereby produce articles having less production defects, and as a reference for the cleaning effect, the content of particles having a particle size of 0.5 μm or more is limited to 1000 particles/ft^3/min or less as measured by a particle counter.

Therefore, in view of at least the foregoing distinctions, the Examiner is kindly requested to reconsider and withdraw the rejections of claims 1-4.

For additional claim coverage merited by the scope of the present invention, Applicants are adding new dependent claims 5 and 6. These claims are believed to be allowable at least by reason of their respective dependencies. No new matter is added.

In view of the foregoing, the claims are now believed to be in form for allowance, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, he is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

Raja Saliba
Registration No. 43,078

SUGHRUE, MION, ZINN,
MACPEAK & SEAS, PLLC
2100 Pennsylvania Avenue, N.W.
Washington, D.C. 20037-3213
Telephone: (202) 293-7060
Facsimile: (202) 293-7860

Date: February 1, 2002

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE SPECIFICATION:

On page 26, second full paragraph, the specification is changed as follows:

The microwave source 86 oscillating at a frequency of 2.45 GHz and producing a maximal output of 1.5kW was employed. The [generaged]generated microwave was guided to the neighborhood of the vacuum chamber 52 by means of the microwave guide 90, converted in the coaxial transformer 92 and directed to the radial antenna 96 in the vacuum chamber 52. The plasma generating part used was in a rectangular form having a width of 600 mm and a height of 200 mm.

IN THE CLAIMS:

Claims 5 and 6 are added as new claims.